Eur J Cancer, Vol. 28, No. 2/3, pp. 649–654, 1992.
Printed in Great Britain

0964–1947/92 $5.00 + 0.00

Radical Surgery and Conservative Treatment of Ductal Carcinoma *in situ* of the Breast

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70 cases of strictly intraductal breast carcinoma were treated from January 1975 to December 1987. 34 patients underwent radical modified mastectomy, and 36 patients had local excision (2), lumpectomy (26) or quadrantectomy (8), with a complementary irradiation in 34/36 cases (with boost in 32). The main histological subtype is comedocarcinoma (25/70). One local relapse (3%) is noted in radical surgery group at 55 months. 3 local relapses (9%) are noted in conservative treatment group, respectively at 27, 48 and 52 months. The obvious factor influencing the local recurrence is the inefficient surgical excision. Since breast screening programs may lead to early duct carcinoma *in situ* identification, our results suggest that appropriate conservative surgery associated to radiation therapy could be an adequate alternative to mastectomy in the treatment of this *in situ* lesion.

Eur J Cancer, Vol. 28, No. 2/3, pp. 649–654, 1992.

INTRODUCTION

UNTIL RECENTLY, intraductal carcinoma has been a relatively uncommon lesion, representing only a small percentage of all breast carcinomas. The usual treatment for patients with ductal carcinoma *in situ* (DCIS) has been mastectomy. However the increasing use of screening mammography results in a greater proportion (from 10 to 30%) of early breast cancers than in the past [1–4]. Moreover, since DCIS occurs often in young women, the traditional management of patient with intraductal carcinoma needs some reevaluation. Paradoxically, although conservative therapy in infiltrating carcinomas is extended, the conservative treatment of the DCIS is still not often accepted.

In the last 10 years, some small series of patients treated by radiosurgical conservative treatment have been reported with encouraging results [5–13]. In our study we compare without randomisation the results of 70 women treated for DCIS, by either radical surgery (RS) or conservative treatment (CT).

MATERIALS AND METHODS

Clinical features

From January 1975 to December 1987, 34 women were treated by RS and 36 by CT at the Paul Strauss Center, or in the general surgery and gynaecology department of Strasbourg's University Hospital. All patients had radiation therapy treatment in the Paul Strauss Center. The median age was 49 years (range 25–79). 36 had post-menopausal status. 3 women presented a previous or synchronous cancer (endometrium in 2 cases and cervix in 1). 2 women had previous contralateral breast cancer, in each case, 2 years previously (1 T2N−; 1 T3N−). In addition, 3 women had simultaneous contralateral invasive breast cancer (T3N−; T2N+; T3N+), treated by radical surgery, radiotherapy, chemotherapy and/or hormonal therapy. Thus, 5 out of 70 (7%) women had previous or simultaneous contralateral breast cancer. A previous benign disease of the breast was found in 11 cases (16%) including 6 fibroadenomas.

A history of breast cancer in the family was noted in 7 cases (10%). The median follow-up was 82 and 56 months, respectively for the RS and CT group. This difference is due to the use of the conservative treatment only from 1980–1981. Table 1 displays the clinical differences between the two groups. The women treated by the CT were younger (48 years versus 51 in the RS group) and presented more frequently small lesions (75% of T0T1 vs. 53% in the RS group). On the other hand, the 4 cases of Paget's disease were in the RS group.

According to TNM classification, the patients were referred as 34 T0, 14 T1, 18 T2, 4 Tx, including 2 women with serosanguineous nipple discharge and 4 others with only Paget's disease. Of the 70 patients, 28 lesions (40%) were detected only

Table 1. Clinical characteristics

	RS (n = 34)	CT (n = 36)
Clinical presentation		
T0*	13 (38)	17 (47)
T1	5 (15)	10 (28)
T2	12 (35)	6 (17)
Tx	—	3 (8)
Paget's disease	4 (12)	—
Post-menopausal status	16 (47)	19 (53)
Median age	51 years	48 years
Previous benign disease of the breast	3 (9)	8 (22)
History of breast cancer in family	3 (9)	4 (11)
Previous and/or synchronous contralateral breast cancer	3	2
Other previous cancers	1	2

(%)
*Including 2 women with only serosanguineous nipple discharge.

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Revised 14 Nov. 1991; accepted 20 Nov. 1991.

Table 2. Pathological characteristics

	RS (n = 34)	CT (n = 36)
Pure DCIS	32	34
DCIS + LCIS*	2	2
Multifocality	12 (35)	7 (19)
Suspicion of focal microinvasion	3	1
Pathological margins		
Negative	34	31
Positive	—	2
Doubtful	—	3
Very extensive type	7 (20)	2 (5)
Size ⩾ 20 mm	12 (35)	6 (17)
Axillary dissections	33 (97)	23 (64)
Positive nodes	1	—
Comedocarcinoma subtype	18 (53)	7 (19)

(%)
*LCIS: lobular carcinoma *in situ*.

by mammography and of these, microcalcifications were found in 22 (79%).

Pathological characteristics

Table 2 shows the pathological findings of each group. A high percentage (35%) of tumours > 20 mm and, moreover, 20% of "very extensive lesions", corresponding generally with very large zones of microcalcification in the mammography, were noted in the RS group.

A suspicion of very focalised microinvasion was noted in 4 cases, 3 in the RS group, and one in the CT group. Multifocality was noted in 35% of the RS group, in comparison with 19% in the CT one. Among the 14 women treated by local excision before mastectomy in the RS group, 7 showed a residual focus of DCIS near the initial tumour or in another part of the breast.

According to histological subtype, comedocarcinoma was found in 18 and 7 cases, respectively in the RS and CT groups, papillary subtype in 2 and 4 and one solid in each. Cribriform and mixed subtypes were found in 12 cases of CT group only. An unspecified subtype of DCIS was found in 11 cases of the RS group and 10 in the CT group. Moreover, a mixed form with associated lobular *in situ* carcinoma was found in 2 cases of each group.

Treatment

In the RS group, treatment always consisted of modified radical mastectomy. For palpable lesions more than 3 cm and in case of large zones of microcalcifications shown in the mammography a mastectomy has been generally performed. An axillary dissection (with an average of 12 lymph nodes removed) was performed in 33 out of 34 cases. Only one positive lymph node, with capsular effraction, was found in a 39 year-old woman with an extensive, multifocal and retroareolar DCIS (5 × 3 × 1 cm), although no invasive component was noted in the tumour. In 5 women treated before 1981, an internal mammary chain dissection was performed too; no positive nodes were found.

In 7 cases (of multifocal and/or extensive DCIS) a complementary irradiation was done: six times on the internal mammary nodes, once on the axillary and supraclavicular nodes (in the only women without axillary dissection). 2 of those 7 patients had irradiation on the chest wall too. The doses were ranged from 46 to 50 Gy, using photons of cobalt 60 and/or electrons.

In this group 3 women had adjuvant hormonal therapy by tamoxifen and two had chemotherapy: one by 6 courses of FAC (the same patient with a positive lymph node) and one by 10 courses of CMF (the patient with a contralateral breast cancer).

In the CT group, the surgery consisted of 2 local excisions, 26 lumpectomies and 8 quadrantectomies. An axillary dissection (with an average of 9 lymph nodes removed) was performed in 23 cases (68%). No positive lymph nodes were found.

34 out of 36 women had complementary irradiation. These 34 women represent 7% of all 473 women treated by conservative approach in the same period (1980–1987). Moreover, they constitute 30% of 56 (out of 473) non-palpable lesions treated. In 27 cases the whole breast received 46 Gy by tangential fields delivered by a Cobalt 60 unit. In 7 cases, doses varied from 48 to 54 Gy, always with a daily dose of 2 Gy. In 32 out of 34 cases, the primary tumour bed was boosted from 56 to 60 Gy (in 5–7 fractions) with a direct field using electrons of varying energy. In this group 7 women had hormonal adjuvant treatment by tamoxifen; in addition, 1 woman, with a contralateral breast cancer (T3N+) had 9 courses of chemotherapy by CMF.

RESULTS

RS group

With a median follow-up of 82 months, we noted 2 deaths: 1 woman, 68 years-old, was treated in July 1984 for a DCIS of 1 cm; she was operated on in August 1986 by lobectomy for a bronchiolo-alveolar carcinoma of the right lung. She died in April 1987, of metastases from lung carcinoma. Another woman, treated in August 1982, with retroareolar comedocarcinoma of 1 cm and Paget's disease, developed an invasive local recurrence in May 1987, with muscular involvement. She was treated by excision and radiotherapy. A new multifocal recurrence occurred in the chest wall in December 1988, and from October 1989 she developed multiple osseous metastases. She died from liver metastases in July 1991. The only woman with axillary involvement is in complete remission 55 months after the treatment. Another woman, with previous breast cancer (T3N−) developed local (contralateral) recurrence, treated by excision, radiotherapy and chemotherapy, and is still in remission with a follow-up of 63 months.

Still in this RS group, we note that 2 women developed a metachronous infiltrating contralateral breast cancer (treated by RS too), respectively 3 and 7 years after the treatment of DCIS. They are in complete remission 61 and 72 months later. At last 3 other patients had a breast reconstruction, respectively 3, 4 and 6 years after the mastectomy.

CT group

With a median follow-up of 56 months, of the 34 women who received the complete conservative associated treatment, we note 3 local recurrences (in one T2 and in two T1) at 27, 48 and 52 months, respectively after the lumpectomy (2) or quadrantectomy (1).

All recurrences were at the initial tumour site: one of these was again pure DCIS, one was invasive and the third was the associated type. The 3 patients underwent a mastectomy and are alive after 48, 40 and 21 months, respectively.

We note that 2 presented a cribriform histological subtype, and 1 a multifocal tumour. Retrospectively, we note especially that 1 woman had an incomplete surgical resection near the

Table 3. Reported results of limited surgery alone for DCIS

Reference	No. of patients	Years of study	Follow-up (months)	Local recurrence (LR) rate	Metastatic evolutions
4	79*	1972–1987	44	8 (10)	0/8
38	18	1970–1976	132	2 (11)	0/2
16	28	1979–1986	38	5 (18)	0/5
6	22	1976–1984	24	5 (23)	1/5
17	25	1950–1968	> 36	7 (28)	4/7
18	13	1944–1981	78	5 (38)	3/5
19	35	1972–1982	NS	22 (63)	2/22
20	10	1940–1950	NS	7 (70)	2/7

(%)
*All patients were T0 and with an histological tumour size < 25 mm
NS: not specified.

Table 4. Reported results of radical surgery for pure DCIS

Reference	No. of patients	Years of study	Follow-up (months)	Local recurrence rate (LR)	Metastatic evolution
23	210	1968–1989	66	3 (1.4)	1
25	70	1960–1972	120	NS	3
24	127	1967–1983	91	9 (7)	2
19	25*	1972–1982	108	4 (16)	NS
27	97	1979–1989	NS	1 (1)	1
15	51	1965–1984	66	—	1
21	45	1960–1981	NS	—	—
Present study	34	1975–1987	82	1 (3)	1

(%)
*Including 19 total mastectomies and 6 subcutaneous mastectomies,
NS: not specified.

nipple and that in a second woman resections margins were doubtful. These 2 patients received a sub-optimal dose on the tumour bed (56 and 58 Gy, respectively).

1 woman, 74 years-old, died 1 month after the lumpectomy, by pulmonary embolism after brachytherapy for synchronous endometrial cancer. Another had a successive excisional biopsy with a second microfocus of DCIS, 6 months after the first operation. She did not receive radiation therapy and is alive and well 15 years after the treatment.

1 patient presented a rectal cancer (Dukes's C stage) 3 years after treatment of DCIS and she died 8 months later from pelvic metastatic evolution.

DISCUSSION

Theoretically, DCIS can be cured by local treatment. However, mastectomy has been the routine procedure justified by the frequency of occult invasive foci in the breast and the multicentric nature of the lesion. Improvements in mammographic screenings allow the detection of more very limited size DCIS, and, in our recent experience, about 30% of infraclinic lesions were DCIS. In addition, considering the results of conservative treatment in infiltrating carcinoma, the question rises whether the conservative therapy could also apply to this *in situ* breast cancer.

Before 1980 DCIS was generally discovered as a mass or because of nipple dicharge [14, 15]. Detailed pathological studies have shown that the average size of areas of DCIS detected by screening mammography is generally smaller than that of lesions operated on in earlier years. In the same way, the risk of micro-invasive disease elsewhere in the breast is smaller in these infraclinical lesions. Lagios [14] found 46% rate of microinvasion for the lesions over than 25 mm and 0% for the lesions less than 25 mm.

The results of limited surgery alone were quite unsatisfactory (Table 3) since a very high rate of local recurrence (LR) occurs, varying from 18 to 70% [6, 16–20]. Moreover, a variable incidence of subsequent metastatic evolutions of 0–60% was noted in patients who relapsed [17–18]. Nevertheless, Lagios found, among a selected population of 79 DCIS (all discovered only by mammography and with a complete histological resection of tumours lower than 25 mm) only 10% of local recurrence, with 4 cases of new DCIS (identified by mammography) and 4 cases of infiltrating carcinoma [4].

Although some authors report a 100% control rate [21, 22] radical surgery is not a complete guarantee of curability: Table 4 shows the frequency of local recurrence, varying from 2% to 16%. A subsequent metastatic evolution was noted in few cases, either after local recurrence [23, 24], or not [15, 25]. In our study of 34 patients treated with radical surgery, we have also observed a case where a local relapse occurred 58 months after mastectomy and metastases 29 months later.

Several factors may be responsible, including the failure to recognise occult invasive foci of carcinoma in other parts of the breast, or a false evaluation of focal invasion in a part of DCIS, especially in very extensive and/or multifocal lesions. Some authors [6, 26] have used electron microscopy to detect these minute foci of "beginning invasion". Therefore, it is possible to suppose that some tumours which fulfil the light microscopic criteria of DCIS are, ultrastructurally, already invasive, even though no stromal invasion can be recognised with the light microscope. In fact, the diagnosis of local invasion is very difficult for the pathologist [6], as can sometimes be the distinction between intraductal hyperplasia and DCIS [6].

The addition of radiation therapy seems to reduce the local relapse rate and the new proposed treatment of DCIS is the radiosurgical conservative approach. The main studies are summarised in Table 5. The LR rate varies from 2% [27] to 10% [9, 11], with a particular high relapse rate of 21% in the Bornstein study [13].

These differences can be partly due to the different length of follow-up and the quality of surgical resection. Indeed, the majority of relapses seems to occur before 5 years, although in three reports, 7 cases relapsed after more than 6 years [11–13].

Table 5. Reported results of limited surgery and radiation therapy for DCIS

Reference	No. of patients	Years of study	Follow-up (months)	Local recurrence (LR) rate
27	51	1980–1986	26	2% (1/51)
10	54	1967–1983	55	6% (3/54)
7	44	1975–1985	61	7% (3/44)
6	29	NS	39	7% (2/29)
12	44	1958–1987	92	9% (4/44)
9	40	1976–1983	44	10% (4/40)
11	51	1978–1985	68	10% (5/51)
13	38	1976–1985	81	21% (8/38)
Present study	34	1979–1987	53	9% (3/34)

NS: not specified.

Table 6. Reported results of salvage treatment for breast failures after CT for DCIS

Reference	No. of local recurrence (LR)	Times to LR (months)	Pathology of LR		No. of patients salvaged*	Follow-up after salvage (months)
			DCIS	Invasive		
27	1/51	NS	NS	NS	NS	NS
10	3/54	34 (16–65)	2	1	2/3	NS
7	3/44	63 (60–68)	—	3	2/3	NS
6	2/29	34 (14–53)	1	1	1/2	54
12	4/44	70 (18–120)	—	4	1/4	*53 (2/4)
9	4/40	27 (17–63)	2	2	4/4	14
11	5/51	40 (19–119)	3	2	5/5	12
13	8/38	66 (17–104)	3	5	7/8	20
Present study	3/34	42 (27–52)	1	2	3/3	36

*Including patients without metastatic evolution after LR, NS: not specified.

The majority of LR occurred at the primary site of the tumour [9, 11–13], and the 3 recurrences observed in our study are localised to the initial tumour site.

The LR risk factors are not clearly identified, since studies involve small number of cases where the margin resection state is not always reported. In our study, 3 cases of LR occurred among the 5 women with pathological margins considered doubtful or positive. In the same way, the precise administered dose to the patients with LR is rarely specified. Indeed, the basic dose in the whole breast varies from 44 to 50 Gy [9, 11–13]; similarly, the boost dose to the tumour bed (which is not regularly delivered) varies from 2 to 24 Gy [13]. Moreover, it is not possible to distinguish the LR rate according to the boost-technique, electrons, iridium 192 implant or photons [13]. In our report 2 patients with doubtful or positive margins received suboptimal doses to the tumour bed of 56 and 58 Gy, respectively.

In the literature, about 60% of LR were invasive forms (Table 6) as in 2 out of our 3 cases. It should be noted, in a cumulative analysis of seven studies concerning 29 LR out of 300 patients (Table 6) that a subsequent metastatic evolution occurred in about 25% of cases.

Although the modalities of follow-up are not specified in the different reports, it is clear that a regular surveillance is mandatory for these patients, to possibly detect a relapse at non-invasive stage, or with a minimal infiltrating component. At our centre, a clinical examination and a mammography of the treated breast are performed every 8 months, with an annual contralateral mammography, during the first 5 years of follow-up for the women treated by CT for a DCIS. This procedure permits us to identify 2 out of 3 relapses at the infraclinical stage, one with pure DCIS and 1 already with an invasive carcinoma. All these patients with LR were salvaged by mastectomy, with 21, 40 and 48 months of subsequent follow-up. Moreover, during regular follow-up, at 12, 20, 38 and 39 months, respectively, 4 other women underwent a new biopsy for clinical or radiological suspicion of LR (twice with new microcalcifications). All these four cases were benign with a sclerosing adenosis in one case atypical hyperplasia in another, and simple fibrosis in 2.

Any relapse was noted in our 17 T0 cases. Bornstein *et al.* [13] reports 2 LR out of 18 T0 (11%) vs. 6 LR out of 20 T1–T2 (30%). Actually about 50–60% of DCIS are non-palpable lesions, discovered by screening mammography. Thus progressive selection of favourable cases, may result in a better prognostic since asymptomatic DCIS is thought to be less aggressive than symptomatic DCIS [16].

We have not found the LR risk factors reported by others, such as comedocarcinoma subtype [4, 27–29] or nipple discharge [9]. The main unfavourable factor seems for us the inadequacy of surgical excision: we note 2 LR out of 5 cases with positive or doubtful pathological margins (40%), versus 1 LR out of 31 cases (3%) with negative pathological margins. Kurtz *et al.* [7] has also noted 2 out of 3 LR in women with DCIS present at the resection margins. The disappointing results obtained in some series of patients treated by limited surgery alone [18–20], can be, in part, explained by a defective assessment of margin sections, especially in patients treated before 1970.

The selection of women exclusively treated by tylectomy needs a confirmed histologically adequacy of the excision evaluated by radiological pathological correlation and by post-operative mammographical examination. Lagios reports a LR rate of 10% about 79 women, with an average of 44 months follow-up (with all lesions less than 25 mm) [4].

Bornstein *et al.* [13] has analysed the quality of biopsy excision in his CT series, but an adequate retrospective study was possible only among the last 15 out of 38 cases. He found 2 LR out of 10 cases with negative margins of excision, and 1 LR out of 5 with positive margins. Since, the delivered doses for these last 5 patients are unknown, an optimal irradiation may reduce the LR rate in this unfavourable group. The axillary involvement is currently absent [6, 9, 11, 22, 30], but some studies reported axillary invasion: in 1/31 cases [31], in 1/53 [14], and 1/109 cases [32]. Rosen [33] has also observed 4 cases of axillary lymph node metastases (with 3–12 involved nodes) with occult pure DCIS of the breast, confirmed by very careful histological examination, with more than 100 sections of each breast. Globally, the axillary involvement rate is rather unusual and concern about 1–2% of cases. It can be explained by missed foci of invasive cancer in the original biopsy specimen, or perhaps in another part of the breast. We have noted only 1 case of nodal invasion in a very extensive and multifocal comedocarcinoma. Therefore, we consider that it is preferable to avoid axillary dissection for infraclinical lesions. However, a lower axillary dissection can be performed in the palpable tumour more than 2.5 cm, because the risk of occult microinvasive lesions, around the tumour or elsewhere in the breast, is higher [14, 34].

The large development of screening mammography is chang-

ing, in part, the natural presentation of DCIS and the therapeutic approach. Until now, mastectomy remains the standard treatment for the majority of authors, according to the high incidence of multifocality, the possibility of occult associated invasive carcinoma, and consequently, the LR risk after conservative radiosurgical approach. All these considerations were particularly true before 1980–1982, because the DCIS were generally already discovered with clinical symptoms, such as a lump (sometimes large), nipple discharge or Paget's disease. In the last years, more DCIS were identified as occult mammographical lesions, on the limited foci of microcalcifications, or little opacities or architectural distortions. Thus, a conservative approach can be suggested with a limited surgery alone for selected cases, with clear section margins, histological tumour size less than 25 mm, and post-operative mammographical examination to confirm no residual micro-calcifications [4]. As for infiltrating carcinoma, the radiosurgical approach seems to be able to enlarge until lesions clinically or radiologically detected, to 30 or 35 mm. Here too, a careful pathological assessment of excision quality is necessary, such as a mammographical post-operative control in case of micro-calcifications. In case of clear incomplete resection, a large re-excision may be performed. In case of a very limited focus of residual DCIS, breast radiotherapy with a boost until 64–66 Gy (by electrons or iridium), can be proposed. Nevertheless, the radiosensivity of pure DCIS is not well known. Fentiman [35] suggested a different biological behaviour than DCIS associated with infiltrating carcinoma. Considering that multifocality is present in about 30–35% of DCIS cases, and that the median LR rate after lumpectomy alone and lumpectomy plus radiotherapy are, respectively about 25% and 9%, we can suppose that the radiation therapy permit us the control of about 70–75% of residual foci of DCIS.

Independently to careful mammographical and pathological assessment to reduce local recurrence, incidence in patients treated by conservative surgery and radiation therapy, it will be emphasised that tumour subtype as comedocarcinoma may account for the treatment choice of DCIS. Indeed, the comedocarcinoma subtype appears more aggressive [4] as suggested by proliferative study, with the thymidine labeling index [29]. Moreover, a correlation between DNA ploidy and histopathology of DCIS was found by Aasmundstad and Haugen [28], who noted that comedo type tumours were preferentially associated with aneuploid histograms. However, a larger study is necessary to conclude about conservative therapy for comedocarcinoma [28, 37].

A definitive answer will probably be suggested by the new randomised prospective international trials concerning DCIS treated by conservative approach and conducted by the EORTC and the NSABP. These trials randomise between wide, microscopically complete, excision alone and complete excision in combination with external radiotherapy (50 Gy on the whole breast). These large prospective studies will help to quantify the potential benefit of radiotherapy, the local risk factors, and the outcome of patients with local recurrence.

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Acknowledgements—We thank Mr Joseph Abecassis for helpful criticism and Mrs Gabrielle Taglang for her typing assistance.

Eur J Cancer, Vol. 28, No. 2/3, pp. 654–657, 1992.
Printed in Great Britain

0964–1947/92 $5.00 + 0.00

Which Therapy for Unexpected Phyllode Tumour of the Breast?

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216 consecutive female patients with histologically confirmed phyllode tumour, the largest series yet reported, were operated on from 1970 to 1989 at our institute and followed-up for a mean period of 118 months. The type of surgery in relation to tumour histotype and natural history were investigated in order to identify the best treatment for this rare breast neoplasm when found unexpectedly at the final histological examination. For the 140 benign tumours, 55 enucleations, 52 enucleoresections, 29 wide resections and 4 mastectomies were performed; the 30 malignant lesions were treated with 3 enucleations, 7 enucleoresections, 9 wide resections and 11 mastectomies; the 46 borderline cases received 11 enucleations, 12 enucleoresections, 18 wide resections and 5 mastectomies. 28 underwent radical surgery following histological diagnosis. There were 27 relapses: 11 (7.9%) in benign, 7 (23.3%) in malignant and 9 (19.6%) in borderline cases. The average disease-free intervals were 32 months for benign, 22 months for malignant and 18 months for borderline phyllode tumours. It is concluded that a wide resection in healthy tissue is indispensable for malignant and borderline phyllode tumours, while, where benign phyllode tumour is encountered unexpectedly, even if a limited resection was performed, a wait-and-see policy is justified.
Eur J Cancer, Vol. 28, No. 2/3, pp. 654–657, 1992.

INTRODUCTION

THE 1982 WHO classification of breast tumours [1] attempted to resolve the long-standing controversy regarding the terminology of the breast condition which Muller first identified as "cystosarcoma phylloide" in 1838 [2]. Numerous other terms have been used since then causing considerable confusion [3]. Accepting that the best appellation for the condition is phyllode tumour, we note that it includes three distinct histotypes: benign, the form first described by Muller, malignant and borderline. Distinguishing these is far from simple and we are indebted to the studies of Norris and Taylor [4] and later Azzopardi [5] for establishing the morphological criteria by which they may be differentiated: character of margins, character of associated connective tissue development, mitotic activity and cellular atypia. In view of the uncertainties concerning the natural history of this rare neoplasm, it is not surprising that the most appropriate surgical treatment remains to be established. Dyer *et al.* [6] and Thomas *et al.* [7] state that phyllode tumour constitutes less than 1% of all tumours of the female breast; and McDaniel and Crichlow's 1989 review noted that only about 700 cases have been described in the literature [8].

The series of 216 consecutive cases of phyllode tumour reported here is the largest thus far studied and therefore provides a clear indication of the most effective treatment for the condition when definitive histological analysis demonstrates its presence after surgery.

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Revised and accepted 24 Oct. 1991.